BY ORDER OF THECOMMANDER
AIR FORCE MATERIEL COMMAND

AFMC INSTRUCTION 33-101

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Communications and Information System

BANDWIDTH ON DEMAND (BWOD) BASELINE DEFINITION

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This instruction implements Air Force Policy Directive AFPD 33-1 (Communications and Information Systems) The purpose of this instruction is to define what the BWOD program management office (PMO) (AFMC CSO/SCSD) must provide at each of the AFMC sites currently in the BWOD baseline to meet BWOD program requirements. This instruction will also highlight items that are not a part of the BWOD baseline. An effort will be made to identify where a minimized implementation can be used to allow sites to stay within budget and meet local or specialized requirements as well as the minimum BWOD requirements. Since this instruction can not foresee all site unique requirements, constraints, and circumstances, a deviation process is included at the end of this document. All deviation requests will be evaluated for action on a case by case basis against program guidance, the strength of the business case, cost, and schedule impacts. In addition, one of the long-range objectives of BWOD is to migrate voice transmission onto the fiber optic transport system.

1. General Instruction. The AFMC Bandwidth on Demand infrastructure will be a robust, high-speed, digital broadband information transport system. It will integrate existing and planned voice, data, video, imagery, and sensory systems, primarily over fiber optics, using evolving technologies as defined in the BWOD Operational Requirements Document (ORD). In general the BWOD Information Transport System (ITS) will host existing systems and provide robust communications capabilities for future systems and their integration. With this in mind, each site shall develop a plan to migrate all voice, data, video, imagery, and sensory systems from copper cable to fiber optics to the fullest extent possible by the end of fiscal year 2005. This plan should be developed by the AFMC site STEM-B with oversight by the AFMC site SC. The bandwidth on demand information transport system will include funding to repair existing system problems, repair or supplement a failing physical infrastructure, provide solutions beyond the requirements for the program, or provide new and different user capabilities and applications.

1.1. The intention of the BWOD program is to deliver robust communications capabilities to non-core and core combat operations and combat support buildings (as defined in the Base Information Transport Systems Architecture (BITSA) and henceforth referred to as buildings) not scheduled

to receive Combat Information Transport System (CITS) funding. Current requirements are defined as a building with a requirement documented in the Base Communications & Information Systems Blueprint. Robust communications capabilities are defined as dedicated switched Ethernet service, with the capability of upgrade to Asynchronous Transfer Mode (ATM) service without the change out of a chassis. This dual use Ethernet/ATM chassis will reduce the time and expense involved in anticipated future upgrade to ATM service. The buildings are determined by STEM-C input to the MAJCOM BWOD PMO in the form of a prioritized list. If the budget will not allow full implementation to all buildings, buildings are cut from the list, starting with the lowest priority, until the budget is adequate. At a minimum, edge devices must be capable of supporting all interface protocols used by the CITS backbone switches.

1.2. The BITSA and the Base Blueprint are broad documents that cover many aspects of the base's information infrastructure requirements. This instruction will be used in concert with these documents to determine the BWOD specific implementation requirements for each site. Solutions to these requirements will be captured in the site specific Project Support Agreement (PSA) and are considered validated when the site's PSA is approved by the BWOD PMO. Site design details will be reviewed and approved by the BWOD PMO at the design review, held after completion of a site's detailed design.

2. Information Transport System Implementation Goal.

2.1. Bandwidth delivery to the desktop: Minimum of 100 Mbps.

2.2. Fiber Optic Cabling: All new fiber optic installations made under the BWOD implementation will use industry standard single-mode fiber optic cable.

2.3. Cable Counts: A maximum of 12 fibers will be installed from an ITN to a building.

2.4. Cable routing, meshing, and building entry conduits: Single cable routing and entry conduit is allowed to buildings from an ITN.

2.5. Installation of Fiber cable: All fiber optic cabling on the BWOD system will be installed by direct burial.

2.6. Termination of Fiber optic cables: All BWOD installed fiber optic cables will be terminated in a fiber optic patch panel.

3. Minimum Implementation.

3.1. Existing multi-mode fiber optic cable, and other media, may be reused where it fulfills BWOD throughput requirements.

3.2. Fiber counts of 12 between ITNs will meet all of the projected BWOD requirements. Fiber counts on reused fiber may be deducted from the total amount of new fiber required.

3.3. Single cable routing and entry conduits are acceptable but not recommended for Primary ITN (PITN) locations. Each PITN must be connected to at least 2 other PITNs minimum. Secondary ITNs (SITNs) can be serviced by a single connection if required.

3.4. Use of existing Manhole and Duct system is encouraged. No aerial fiber is allowed.

3.5. A subset of fiber optic cables can be terminated in a fiber optic patch panel as long as at least one pair is used from each bundle and spare pairs are terminated for all fiber pairs placed into service.

4. Number of ITNs. A maximum of one additional ITN is allowed.

5. Interface Connection Data Rates. Connection rates between ITNs will be a minimum of OC-12 ATM (622 Mbps). Connections between PITNs require a minimum of 2 connections at the OC-12 data rate. Between a PITN and a SITN, a minimum of one connection is at the OC-3 data rate. Between ITNs and buildings with existing 10 Mbps LANs will be connected at a minimum of 100 Mbps switched Ethernet, with the capability of upgrade to ATM without change out of equipment chassis.

6. Uninterruptable Power Supplies (UPS). All ITNs will be on UPS capable of supporting the equipment for up to 8 hours of operation.

7. Number of Vendors. It is a goal of the BWOD program to use a single vendor's solution and products. This approach leads to simplified training, operations, and maintenance costs. Only products recommended by U.S. Army Technology Integration Center (TIC) Common User Installation Transport Network (CUITN) - ATM Equipment Evaluation Report are to be used at this time.

8. Premise Wiring. A minimum Category 5 Unshielded twisted pair will be used in all BWOD premise wiring installations.

8.1. All building wire upgrade projects will be based on projected near term network user/device population.

8.2. If facility modifications can be accomplished to meet the requirements of the BWOD equipment without impacting schedule and within the cost of the smart equipment rack, the facility upgrade is allowed.

8.3. Minimum ITN implementations are driven by site size, utilization, and topology. ITNs are costly and the number of overall ITNs should be minimized.

8.4. A two vendor solution can be used if adequate justification is given for why a one vendor solution is not preferable. Integration of BWOD ITS edge devices with the site's existing equipment is by far the strongest argument for a two vendor solution.

8.5. Use of existing premise wiring is encouraged once determination is made that it can support the highest data rates required.

9. Consideration. All proposals for improved performance, reduced costs, site unique requirements, or requests for deviation from this instruction must be formally forwarded through the MAJCOM to the BWOD PMO for consideration prior to site survey(s). Any input received after the beginning of the site survey will be considered by exception only.

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